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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,882	05/21/2004	Alan J. Mitcham	84759 3159 TAL	8603
20736	7590	07/19/2005	EXAMINER	
MANELLI DENISON & SELTER 2000 M STREET NW SUITE 700 WASHINGTON, DC 20036-3307			LAM, THANH	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 07/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/849,882	Applicant(s) MITCHAM ET AL.	
	Examiner Thanh Lam	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,8-15 and 17-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,8-15 and 17-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,3-4,8-14,17-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarczyński (EP 0 416 906 A2) in view of Sawyer (US 2,279,014).

Regarding claims 1,18,25-26,31-32, Jarczyński disclose a stator core for an electrical machine, the stator core comprising high thermal conductivity components within a low loss stator iron assembly, the high thermal conductivity components providing heat conductor pathways to facilitate heat transfer and heat dissipation from electromagnetic windings within the electrical machine, the low loss stator iron assembly comprising low loss stator iron laminations of a material, the high thermal

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conductivity components: but, Jarczynski is silent about coatings/electrically insulating/adhesive applied to the laminations or thermal components

Sawyer discloses comprising coatings/electrically insulating/adhesive applied to the laminations or thermal components.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the laminating and the thermal components assembly of Jarczynski by adopt the coatings/electrically insulating/adhesive as taught by Sawyer in or to improve electrical insulation and minimize short-circuit.

Regarding claim 3, the proposal in combination of Jarczynski and Sawyer disclose said laminations are in the range of 0.1 to 0.35mm thick (.014" = .035mm).

Regarding claim 4, the proposal in combination of Jarczynski and Sawyer disclose said material is one of a high resistivity silicon steel ((or)) and cobalt iron alloy and each lamination of the low loss stator iron is insulated for eddy current inhibition.

Regarding claim 8, the proposal in combination of Jarczynski and Sawyer disclose the high thermal conductivity laminations comprises carbon fibres ,the carbon fibres are arranged to extend radially.

Regarding claim 9, the proposal in combination of Jarczynski and Sawyer disclose the proportion of components of high thermal conductivity is in the range up to 20%.

Regarding claim 10, the proposal in combination of Jarczynski and Sawyer disclose the low loss stator iron assembly presents a repeated pack width in the range of 3mm to 8mm of low loss stator iron either side of a width of high thermal conductivity

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component in the range of 0.5mm to 1.0mm.

Regarding claim 11, the proposal in combination of Jarczynski and Sawyer disclose there is a high thermal conductivity cement, adhesive, paste, gel or other means between the high thermal conductivity components and the low loss stator iron assembly to facilitate good thermal transfer between them.

Regarding claim 12, the proposal in combination of Jarczynski and Sawyer disclose the thermal conductivity components have radially outer edges, the radially outer edges of the high thermal conductivity components extend beyond the body of the low loss stator iron assembly to facilitate in use greater heat transfer to a stator housing and/or cooling means for the stator core.

Regarding claim 13, the proposal in combination of Jarczynski and Sawyer disclose the radially outer edges of respective adjacent high thermal conductivity components comprise tabs, pins, pedestals or other heat transfer features which are staggered or offset relative to each other between components.

Regarding claim 14, the proposal in combination of Jarczynski and Sawyer disclose a high thermal conductivity layer is provided for better thermal contact between the stator core and a housing for the stator core.

Regarding claim 15, the proposal in combination of Jarczynski and Sawyer disclose the high thermal conductivity layer is a coating on the outside of the stator core or on the inside of the housing or both.

Regarding claim 17, the proposal in combination of Jarczynski and Sawyer disclose the high thermal conductivity component is selected from the group comprising

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carbon fibre material, carbon fibre copper metal matrix composite, carbon fibre aluminium metal matrix composite, carbon nanotube composite, exfoliated graphite composite, carbon fullerene composite, silicon nitride and aluminium nitride.

Regarding claim 19, the proposal in combination of Jarczyński and Sawyer disclose the electrical machine is a permanent magnet electrical machine.

Regarding claim 120, the proposal in combination of Jarczyński and Sawyer disclose the rotor carries permanent magnets and the stator carries windings.

Regarding claim 21, the proposal in combination of Jarczyński and Sawyer disclose the rotor carries windings and the stator carries permanent magnets.

Regarding claim 22, the proposal in combination of Jarczyński and Sawyer disclose the core is a stator core.

Regarding claim 23, the proposal in combination of Jarczyński and Sawyer disclose the core is a rotor core.

Regarding claim 24, the proposal in combination of Jarczyński and Sawyer disclose high thermal conductivity components are arranged at the ends of the core.

Regarding claim 27, the proposal in combination of Jarczyński and Sawyer disclose the electrically insulating and thermally conductive material comprises aluminium nitride or silicon carbide.

Regarding claim 28, the proposal in combination of Jarczyński and Sawyer disclose the high thermal conductivity coating comprises copper or aluminium.

Regarding claim 29, the proposal in combination of Jarczyński and Sawyer disclose an insulating coating is arranged on the high thermal conductivity coating.

Regarding claim 30, the proposal in combination of Jarczynski and Sawyer disclose the insulating coating comprises copper oxide or aluminium oxide.

Regarding claim 33, the proposal in combination of Jarczynski and Sawyer disclose the electrically insulating and thermally conductive material comprises aluminium nitride or silicon carbide.

Regarding claim 34, the proposal in combination of Jarczynski and Sawyer disclose the high thermal conductivity coating comprises copper or aluminium.

Regarding claim 35, the proposal in combination of Jarczynski and Sawyer disclose an insulating coating is arranged on the high thermal conductivity coating.

Regarding claim 36, the proposal in combination of Jarczynski and Sawyer disclose the insulating coating comprises copper oxide or aluminium oxide.

Regarding claim 37, the proposal in combination of Jarczynski and Sawyer disclose the high thermal conductivity laminations comprises carbon nanotubes, the carbon nanotubes are arranged to extend radially.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Lam whose telephone number is (571) 272-2026. The examiner can normally be reached on t-f 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Thanh Lam
Primary Examiner
Art Unit 2834
